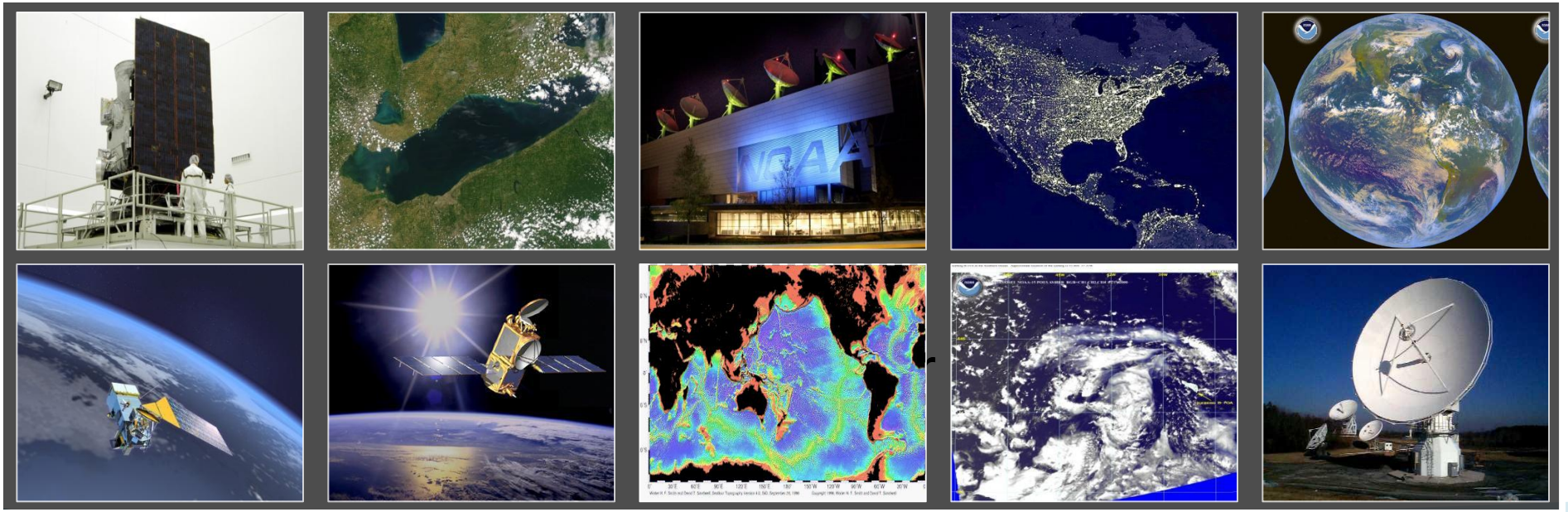
ProTech Industry Day
OSPO
3 March 2016
NOAA – Silver Spring, MD



R. Renée SmithDearring
Missions and Project Transition to Operations and IJPS Team Lead
Office of Satellite and Product Operations

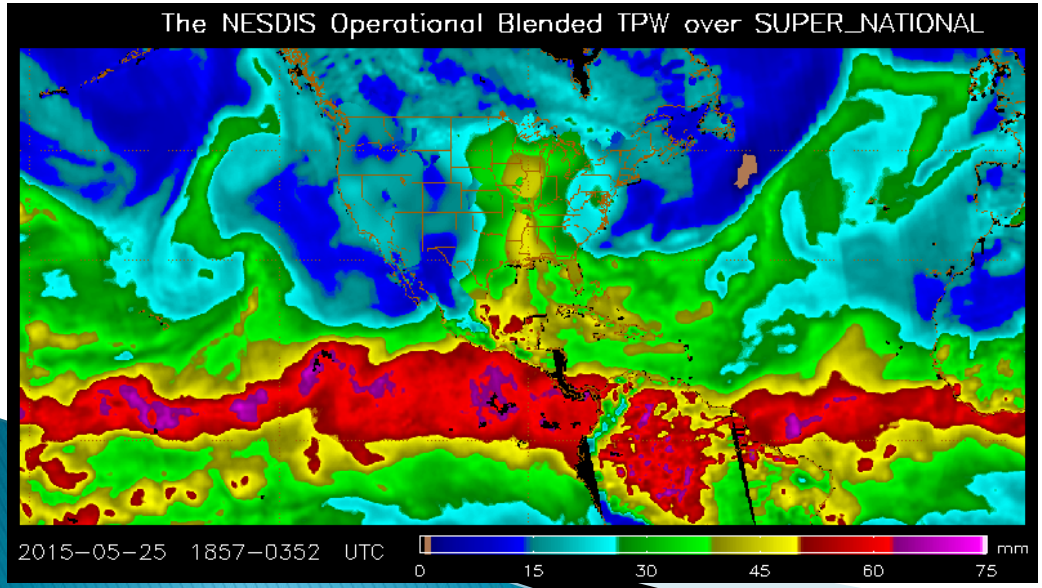
Briefing Outline

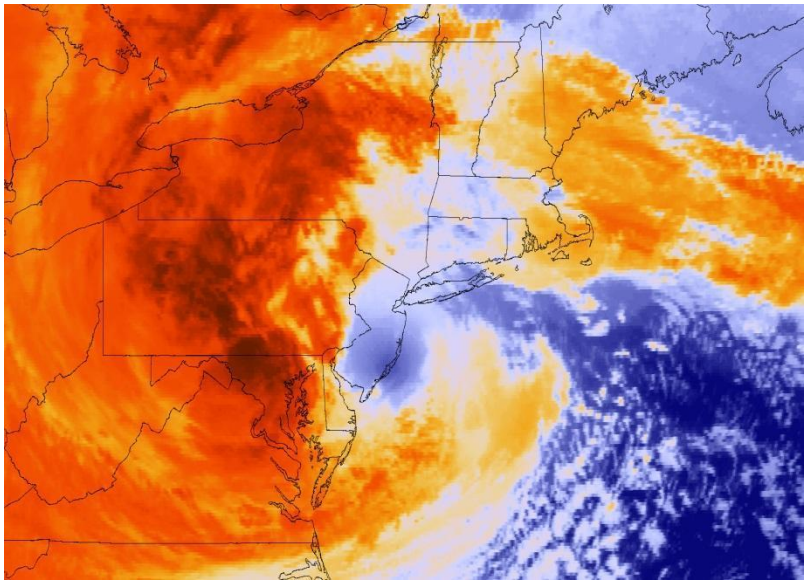
- What Is OSPO?
- What Does OSPO do?
- Where are we doing all these things?
- What is in OSPO's Future?
- OSPO and ProTech
  - Current contract
  - Contract Opportunities

What Is OSPO?

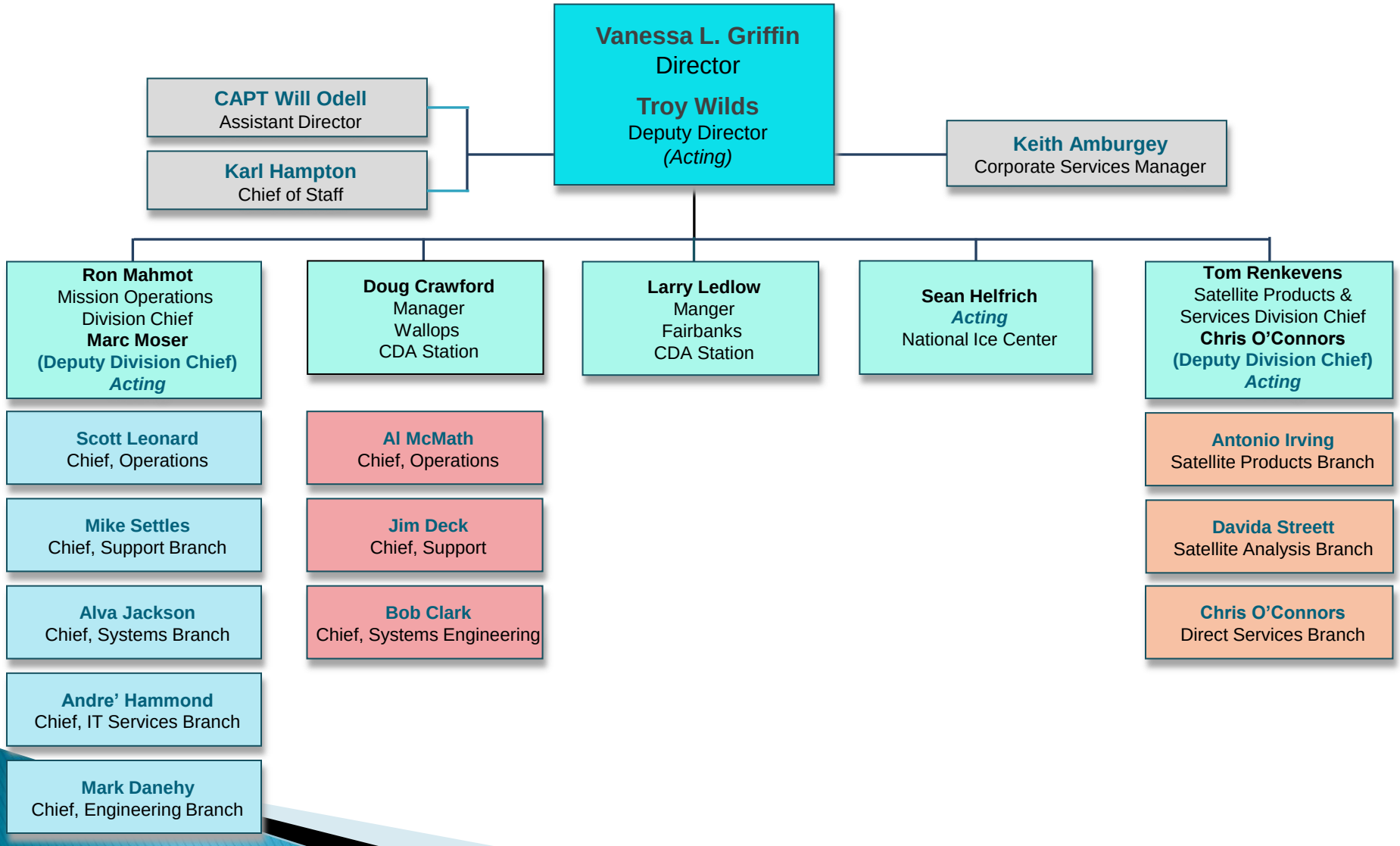
Office of Satellite and Product Operations

Mission: To acquire and deliver accurate, timely, and reliable satellite observations and integrated products





OSPO Organizational Chart



Mission Operations Division

Manage and direct NOAA's 24x7 environmental satellite operations

Manage and operate information

- Satellite command and control
- Generation and distribution of products
- Delivery of services
- Evaluate technical performance of the satellites and derived products and services
- Support launch, activation, and evaluation of new satellites and associated products/services
- Respond to satellite and ground system anomalies

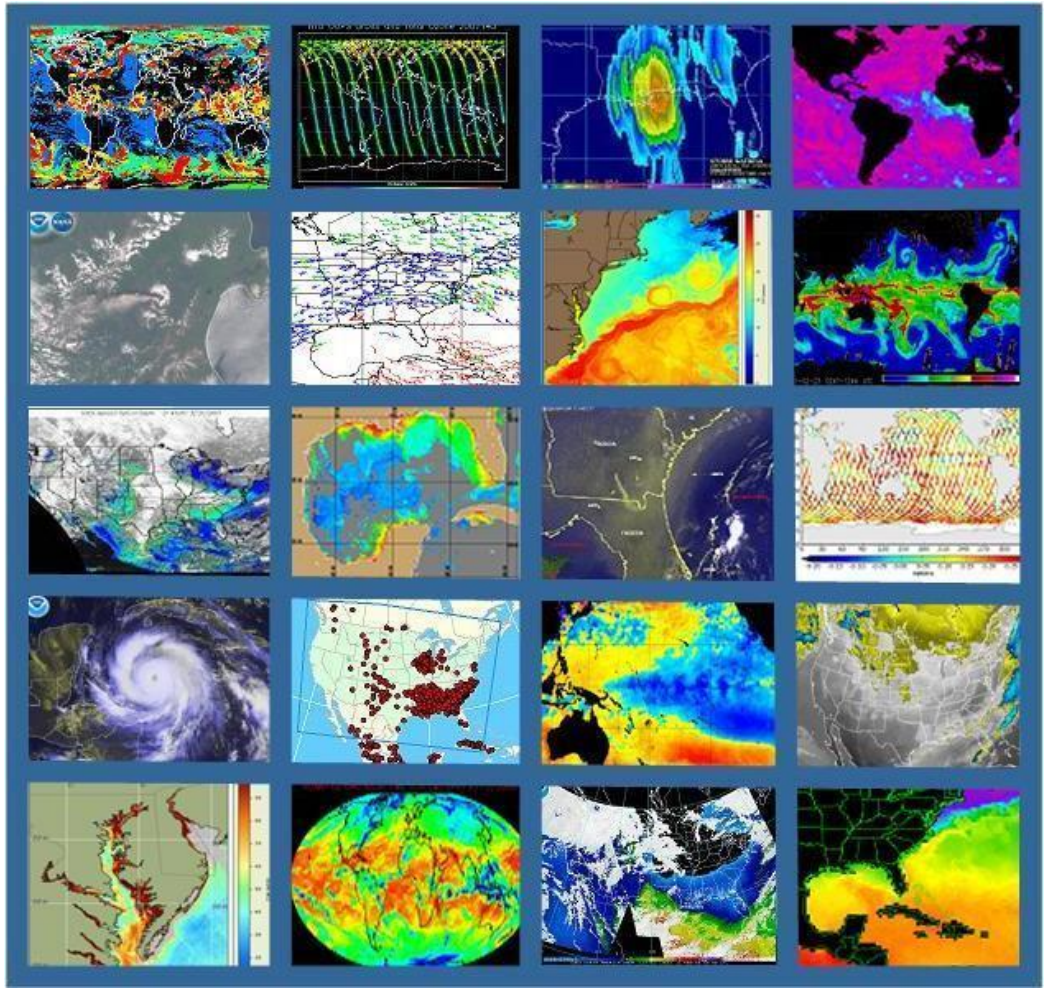
Coordinate with Department of Defense, on matters having to do with the readiness of NOAA's satellites to support the national defense

Command and Data Acquisition Stations (CDA)

- Manage and operate Command and Data Acquisition facilities and information processing systems to command and control environmental satellites and ingest data

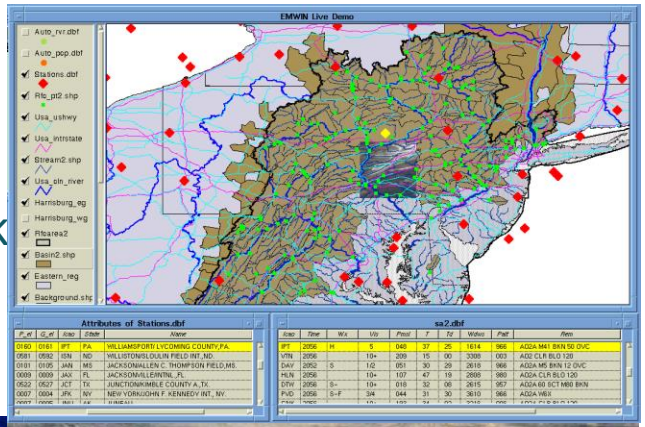
Satellite Products and Services Division

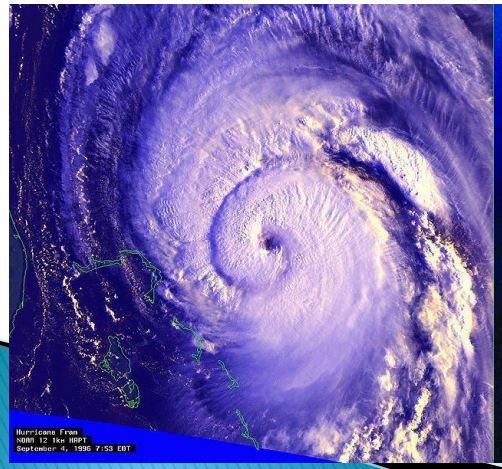
- Provides 24x7 interpretive analyses of satellite data
  - Atmospheric temp/moisture
  - Hurricane intensity and position
  - Significant Precipitation
  - Volcanic Ash
  - Fire and Smoke
  - Oil Spills
- Manages automated environmental products
- Collaborate with partners to support transition of research products into operations



Satellite Direct Services

- Search and Rescue Satellite Aided Tracking (SARSAT)
- Argos Data Collection System
- GOES Data Collection System
- Broadcast Services
  - Geonetcast
  - Emergency Managers Weather Information Network
  - Direct broadcast of geostationary and polar data

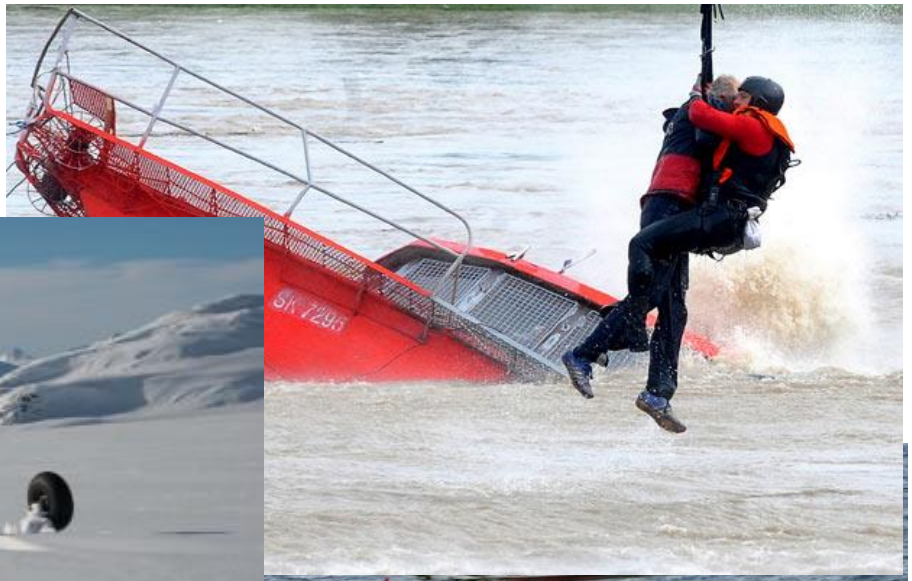


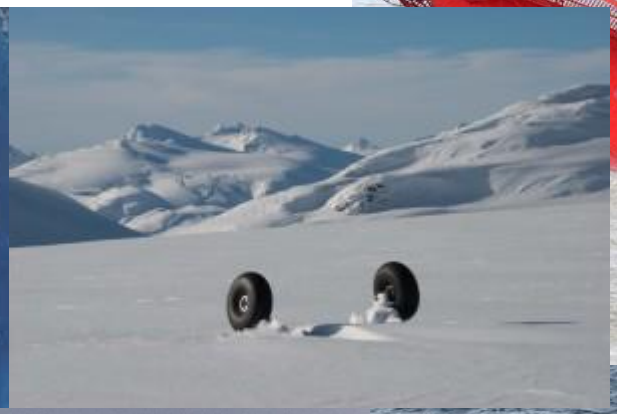


SARSAT Search and Rescue

World-wide: over *37,000 rescues*

United States: over *7,500 rescues*





National Ice Center (NIC)

- Tri-agency organization between NOAA, U.S. Navy and U.S. Coast Guard
- Numerous international partners
- Supports National Weather Service operations in Alaska, Great Lakes, and northeast.
- Provide snow and ice data for National Centers for Environmental Prediction (NCEP) weather and climate prediction models
- Directly supports U.S. Navy SubForce arctic operations, U.S. Coast Guard icebreaking operations in Arctic and Great Lakes, and National Science Foundation operations (Arctic and Antarctic)

What Does OSPO Do?

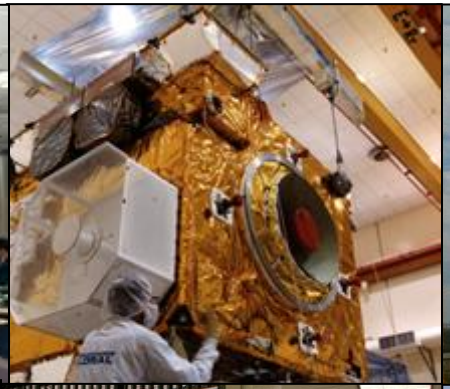
OSPO End to End Responsibilities

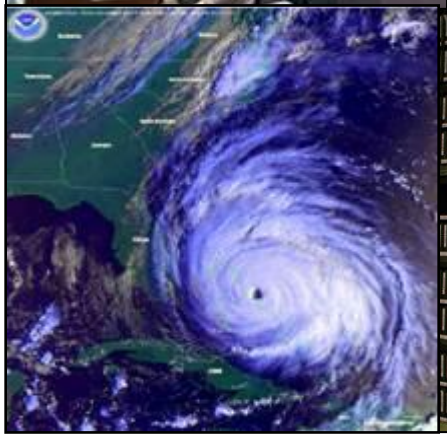
Requirements & Planning*

Satellite and Ground System Acquisition*

Launch Support*

Command & Control‡





Real-Time Product Development & Distribution‡

Data Archive & Access‡

Products & Services‡

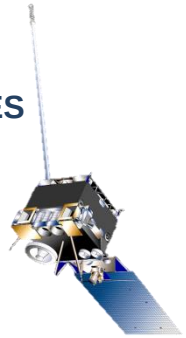
‡ OSPO Leads

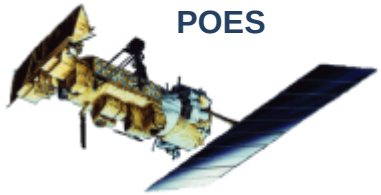
* OSPO Roles

OSPO Principal Activities

Managing the nation's weather satellites

- **Provide On-Orbit Satellite Operations**
  - 24/7 Satellite operations and product processing
    - Geostationary satellites (GOES)
    - Polar-orbiting satellites (POES)
    - Defense Meteorological Satellite Program (DMSP)
      - DMSP is operated by NOAA for the Air Force
    - Jason-2 and -3 altimetry satellite
    - Suomi National Polar-orbiting Partnership (SNPP)
    - DSCOVR (Solar Wind Continuity)



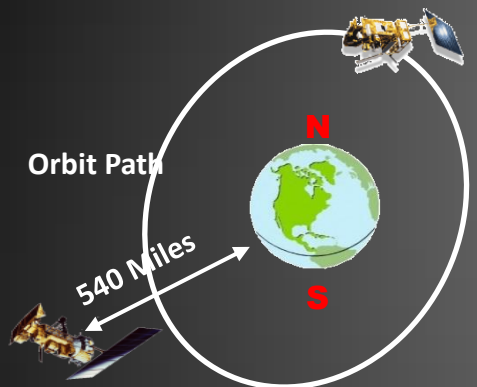


- **Integrate Next Generation Satellites**
  - GOES–R and –S Satellite Series
  - Joint Polar Satellite System (JPSS)
  - Cosmic -2 (Radio Occultation)

- **Provide Long Term Data Access and Stewardship**
  - Comprehensive Large Array-Data Stewardship System (CLASS)
- **Operate CDAs and ground systems to support On-Orbit Assets**

Three Observation Points

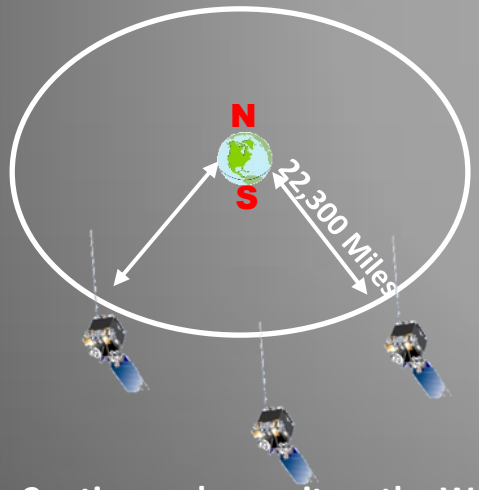
Polar-orbiting Operational Environmental Satellites



Each satellite covers the Earth twice per day

- Pole-to-pole orbit is 102 minutes and views each location at the same time of day
- Global coverage every 12 hours with one satellite
- Information is used for mid-range, 3-7 day advanced warnings of severe weather, and environmental imaging and monitoring for short term polar weather and global ocean and atmosphere forecasting/monitoring

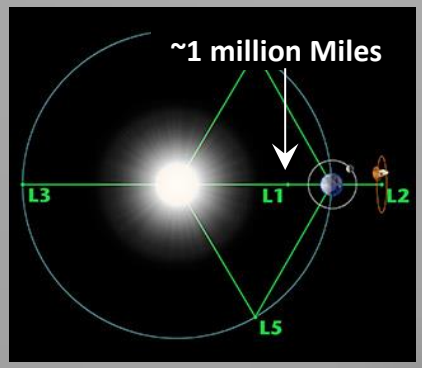
Geostationary Operational Environmental Satellites



Continuously monitors the Western Hemisphere

- Same geographic image over time
- Full image every 30 minutes and Northern Hemisphere images every 15 minutes
- Usable images between 60°N and 60°S
- Information is used for short-term weather forecasting and severe storm warning/tracking

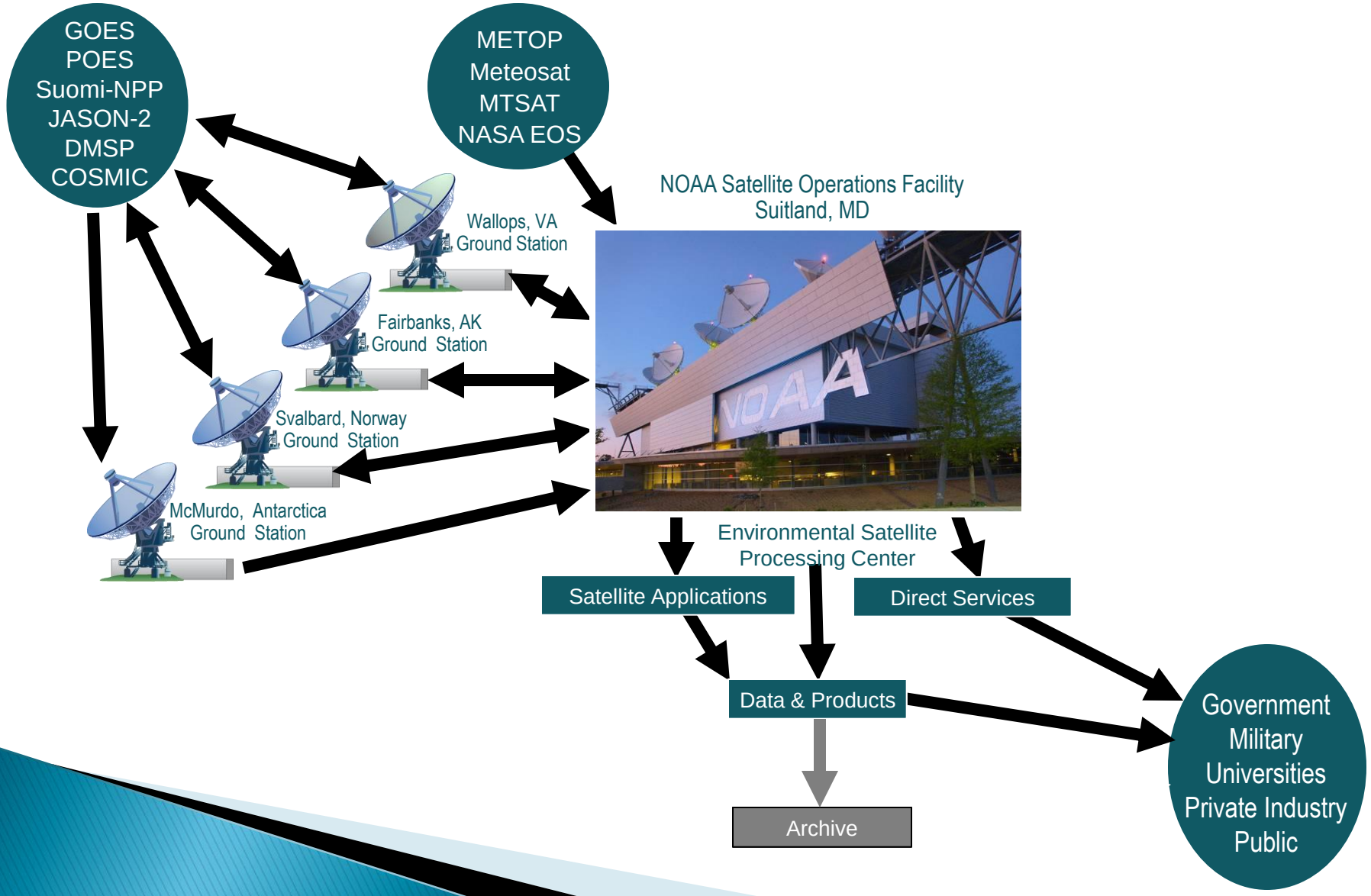
Deep Space at Lagrange 1 Point



Continuously monitors the surface of the Sun

- Uninterrupted view of the sun
- Located ~1 million miles from Earth, at the Lagrange Point 1 position of the Sun-Earth system
- Information is used for solar winds monitoring for Space Weather warnings

Satellite Information Flow



Additional Mission Operations

- OSPO Supports the operations of three other satellite constellations:
  - METOP
    - Two Satellites: METOP-A and METOP-B
  - Accumulated Cyclone Energy (ACE)
  - COSMIC
- OSPO operates the DMSP constellation on a cost reimbursable basis
- OSPO receives and processes data products from a number of other satellites:
  - NASA Satellites: Terra, Aqua, TRMM
  - METEOSAT, MTSAT, RADARSAT, and other international satellites

Missions to be Integrated during the next 3 Years

Mission	Description	Launch Date	Transition Date
Jason-3	Ocean Surface Topography Mission	Jan 2016	L+6 mos
GOES-R	Geostationary Operational Environmental Satellite Series-R	Oct 2016	L+6 mos
JPSS-1	Joint Polar Satellite System	March 2017	L+90 days
GOES-S	Geostationary Operational Environmental Satellite Series-S	Q3	L+6 mos

Where are does OSPO Do All This?

Satellite Facilities

OSPO Workforce:

317/293 Federal

5/ 4 NOAA Corps

235/230 Contractors

557/527 (Auth/Assign)

Suitland, MD

College Park, MD

Fairmont, WV*

Wallops, VA

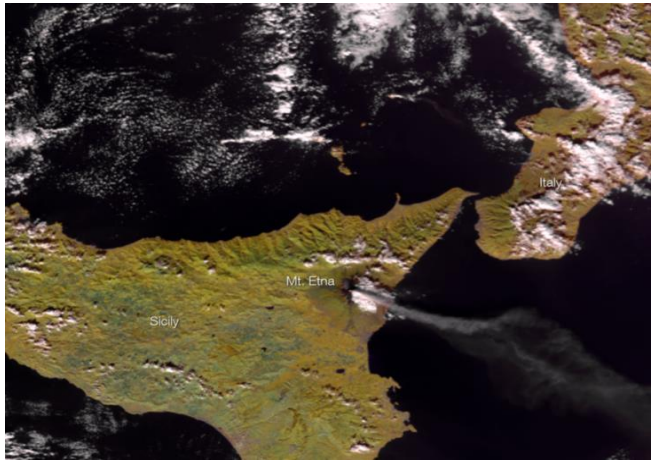
Fairbanks, AK

* GOES-R and JPSS Backup Facility under construction

Where Else in the World?

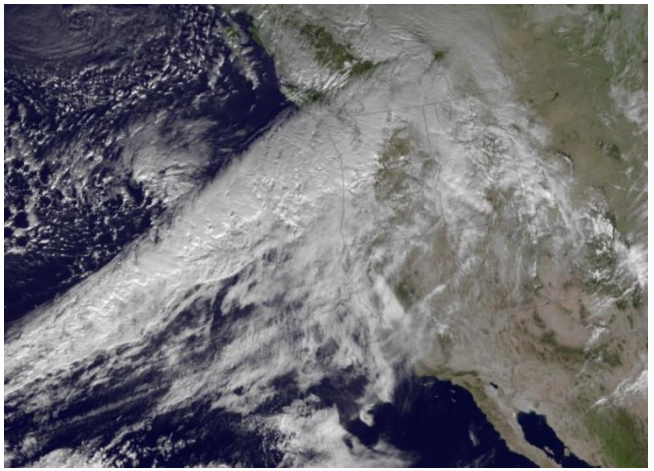
- Colorado: DMSP, SNPP, JPSS
- Norway: SNPP, Metop, JPSS
- McMurdo/Troll: JPSS, DMSP
- Global LUTS: SARSAT

What Drives OSPO?

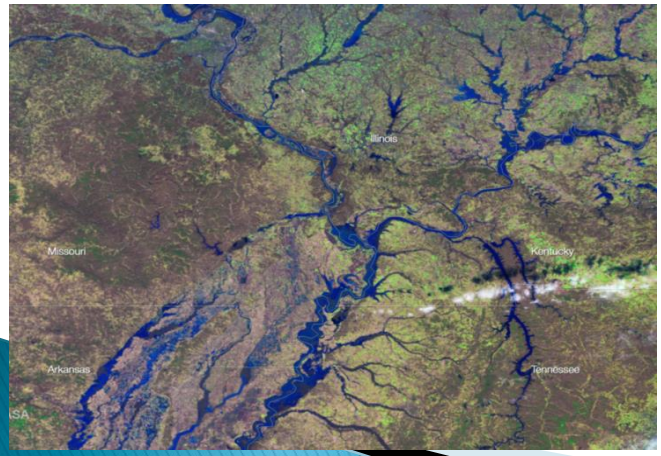


S-NPP Imagery of Mt. Etna eruption

Weather satellites provide data critical to the accuracy and timeliness of the nation's weather forecasts and warnings

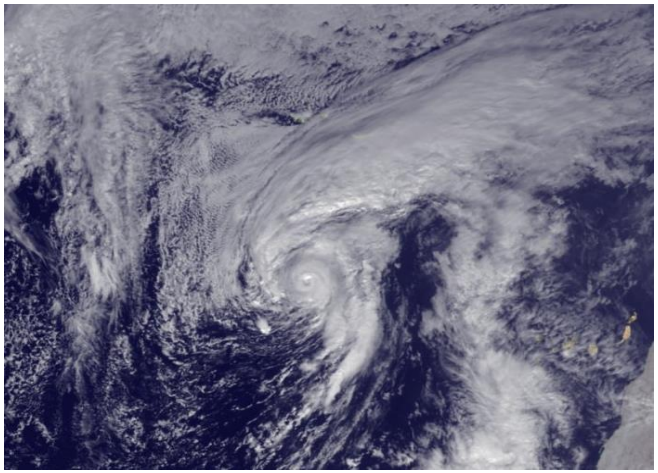


GOES Imagery of Western U.S storm



S-NPP Imagery of Mississippi River Flooding

NOAA's weather satellites are essential to public safety, and they underpin the entire public and private weather enterprise



GOES Hurricane Alex Image

What is the future for OSPO?

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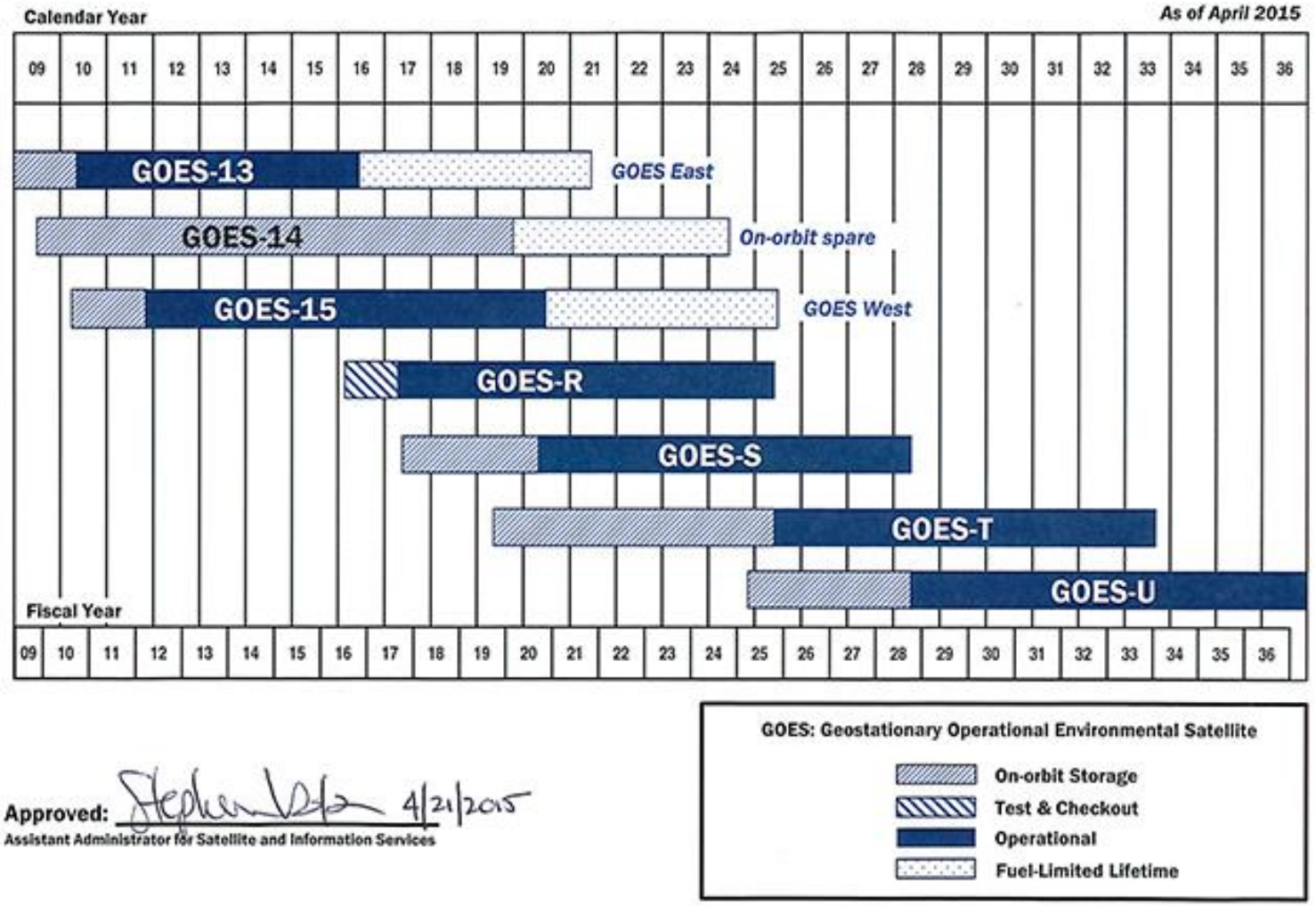
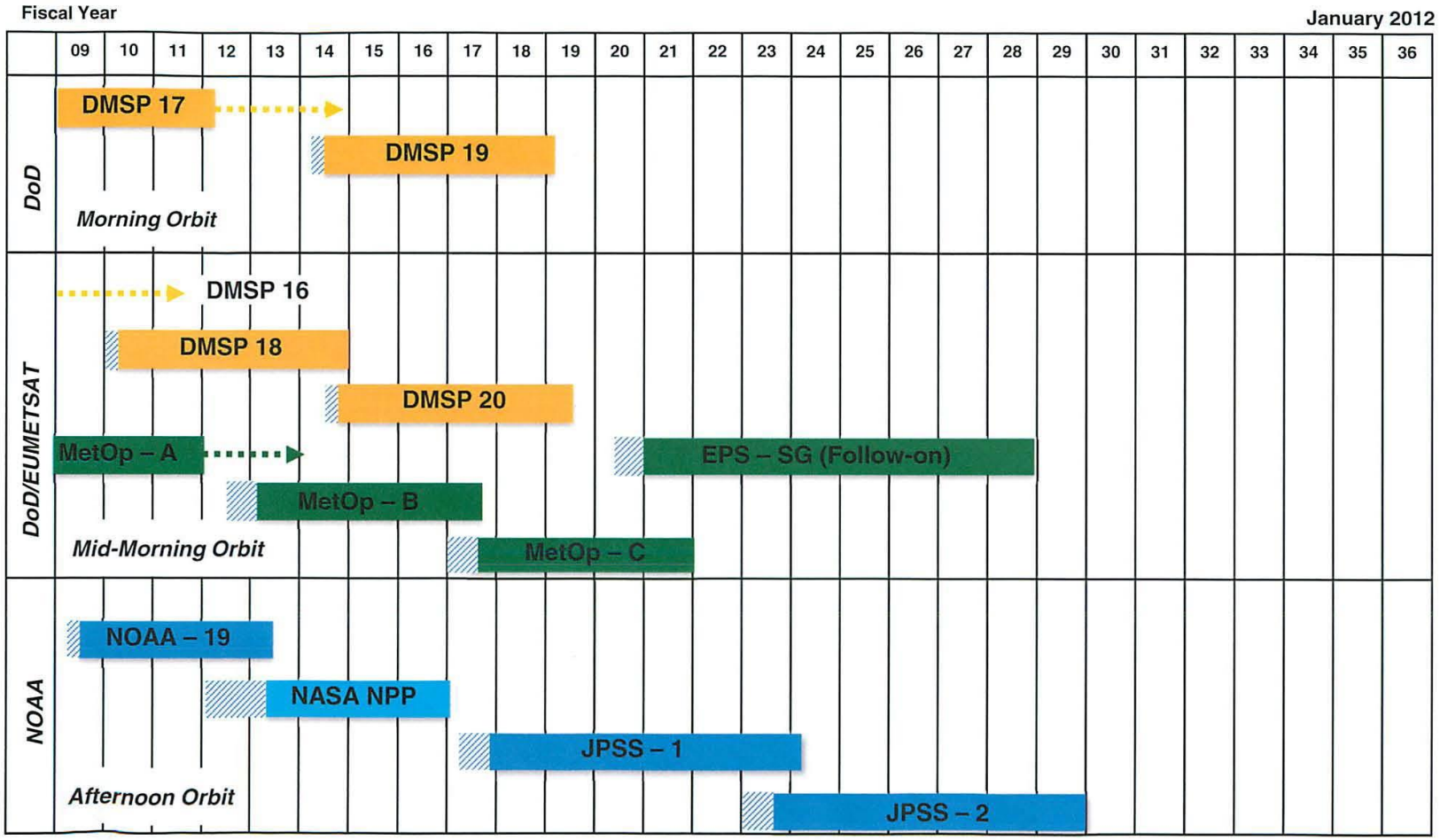
Continuity of GOES Mission



Approved: Stephen Volz 4/21/2015
Assistant Administrator for Satellite and Information Services

Continuity of NOAA's Polar (Primary) Operational Satellite Programs



Approved: Mary E. Kicza
Assistant Administrator for Satellite and Information Services

Signed on: 2-08-2012

OSPO and ProTech

OSPO Contract Opportunities for ProTech

- Engineering and Missions Operations Support Services (EMOSS)

Current OSPO Contracts

(pg 1 of 5)

Name of Contract	Option Period of Performance	Type	Description	Value
Engineering and Mission Operations Support Services-IV (EMOSS-IV) **Vendor: AS and D, Inc.**	**Nov 2014 – May 2016***	**CPFF**	**Satellite and Mission Operations Support professional engineering services. Supports satellite engineering, ground systems engineering, engineering configuration management, satellite operations controllers, and support for current and future operational environmental satellite constellations**	**$8.5M to $15M**
Satellite Mission and Operations and Maintenance Support (SMOMS) Vendor: MAXIMUS Federal Services – 2020 Company	July 2014 (with options periods through July 27, 2019).	FFP and TM	Provide Program Management, System Engineering, and Operations & Maintenance services for NOAA's Satellite and Product Operations in Suitland and College Park, MD.	$90M to $130M
Fairbanks O&M Contract (FCDA O&M) **Vendor: AS and D, Inc.**	**May 1, 2011 – July 31, 2016***	**Fixed Price**	**Operations and Maintenance Support for the Fairbanks Command and Data Acquisition Station.**	**$30M to $55M**

* currently in procurement

Current OSPO Contracts

(pg 2 of 5)

Name of Contract	Option Period of Performance	Type	Description	Value
World Satellite Communication Services (WSCS) II *Vendor: SES Government Solutions, Inc.*	May 16, 2016 (with options periods through May 15, 2024)	GSA Awarded Contract	This contract provides communications services supporting the U.S. Polar Weather Satellite programs including the Department of Defense's Defense Meteorological Satellite Program (DMSP); the Department of Commerce's Polar-orbiting Operational Environmental Satellite (POES) systems, Geostationary Operational Environmental Satellite (GOES) systems and GOES Data Collection System (DCS); and, European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) Meteosat Second Generation (MSG) satellites Japan Meteorological Agency (JMA) Multi-functional Transport Satellite (MTSAT) satellites.	**$15M to $35M**
Initial Joint Polar System (IJPS) - Communications Element (CE) *Vendor: Earth Resources Technology, Inc.*	August 1, 2016 – July 31, 2017	Firm Fixed Price (FFP)	The Communications Element of Initial Joint Polar System (IJPS) which provides international data connectivity and end equipment at Darmstadt, Germany and Suitland, Maryland. Contract provides Mission Critical Network Operations and Maintenance Services with 24x7x365 NOC Monitoring.	**$4.5M to $9M**

Current OSPO Contracts

(pg 3 of 5)

Name of Contract	Option Period of Performance	Type	Description	Value
GEONETCast *Vendor: Knight Sky Consulting and Associates LLC*	February 13, 2016 – February 12, 2017	Firm Fixed Price (FFP)	GEONETCast Americas uplink and broadcast services for 2 megabits per second.	**$900K to $2M**
RADARSAT Data *Vendor: MDA Geospatial Services Inc.*	September 25, 2016 – September 24, 2017	Time and Material	Processing and real-time delivery of RADARSAT-2 Synthetic Aperture Radar (SAR) Data (Ice Services)	**$800K to $1.5M**
SARSAT USMCC Contract *Vendor Earth Resources Technology, Inc.*	July 1,2015 – June 30, 2016 Two more option years through June 30, 2018	Firm Fixed Price and Time & Materials	U.S. Mission Control Center (USMCC) contract provides staffing for the mission control center 24/7, 365 days a year; covers the registration staff to support beacon registration activities; and covers maintenance and IT Security for all the hardware and software for both the MCC and beacon registration system. Contract funding with NOAA ORF, USCG and USAF Reimbursable funds.	**$20M to $40M**
GSA Commodities Contract	October 1, 2016 – September 30, 2017		Hardware and Software Maintenance Purchases. GSA Awarded Contract.	**$3.5M to $7.5M**

Current OSPO Contracts

(pg 4 of 5)

Name of Contract	Option Period of Performance	Type	Description	Value
Sentinel Data Contract	**August 1, 2016 – July 31, 2017**	**Fixed Price**	**Hardware and Software Purchase for Sentinel data ingest security. Continued service support for current Sentinel 1a and adding Sentinel 1b.**	**$400,000.00 $300K to $600K**
GOES DCS/DST Contract	September 9, 2016-September 8, 2017	Firm Fixed Price	GOES DCS Operations and Maintenance, Customer Services, Data Base and Web page support	**$225K to $550K for FY16**
GOES DCS Microcom Contract	**March 15-2016-March 4, 2017**	**Time and Materials**	**GOES DCS Ground System Maintenance and Sustainment, engineering support**	**$375K to $800K for FY16**
LEO/GEO LUTS Maintenance Contract	July 22, 2016 – July 21, 2021	FFP, CPFF, and Time and Materials	O&M CLIN is FFP. GEOLUT Upgrades, Second Gen Beacon Upgrades and LUT Disposal are all Cost Plus Fixed Fee, Engineering Support is Time and Materials. Contract is being awarded as a JOFOC to the current vendor while replacement LEOLUTs are built. GEOLUTs upgraded with new hardware in the base year and then maintained throughout the full 5 year period of performance. There is an additional option to upgrade GEOLUTs to process Second Generation Beacons.	$900K to $2M for FY16 $1.8M to $3.6M total contract value

Current OSPO Contracts

(pg 5 of 5)

Name of Contract	Option Period of Performance	Type	Description	Value
4th Generation LEOLUTs with Optional MEOLUT Capabilities	Sept 1, 2016 – Aug 31, 2021	FFP, CPFF, and Time and Materials	This is a competitive contract to design and build replacements for the current operational LEOLUTs. At some locations, the LEOLUTs will have a capability to collect and process data from MEOSAR satellites. Procurement of LEOLUTs and O&M will be Cost Plus Fixed Fee (or Firm Fixed Price), Engineering Support is Time and Materials.	**$1.8M to $3.5M for FY16 $3.5 to $8M value**
SARSAT FL & HI MEOLUT Operations & Maintenance Support Contract (FAAPS 49555) NEEB5000-16-0345	**May 1, 2016 - April 30, 2021**	**Firm Fixed Price and Time & Materials**	**The O&M CLIN is FFP and the Engineering Support and Spare Parts CLINs are Time and Materials. This contract is being awarded as a JOFOC with the current vendor and funding is being accomplished with NOAA ORF, USCG and USAF Reimbursable funds.**	**$6.5M to $12M**

Engineering and Missions Operations Support Services (EMOSS) Contract

Background

- **Current contract –** Professional Engineering Services
- **Missions Supported:** GOES, POES, S-NPP, Metop-A/B, Jason-2/-3, DSCOVR
  - Future:JPSS-1, GOES-R/S/T/U, Metop-C
- **Requirements:**
  - Satellite engineering: Support real-time ops, satellite and ground anomalies, contingency planning
  - Support ground systems engineering testing and analysis
  - Satellite engineering product configuration management
  - Support for current and future operational environmental satellite constellations.
  - Provide leadership for transition to operations for new missions and project
  - International mission support and coordination efforts
  - Intra-government agency satellite missions coordination
  - Satellite operations controller
  - Training to 24X7 Operations
  - Satellite engineering Support for DMSP that is Non-DOD
- **Locations of Facilities**
  - VA, MD, AK, WV, CO, Germany, Norway, McMurdo, global SARSAT LUTs

Labor Categories and Technical Areas of Interests

- Program Managers
- Technical Leads and Satellite/Instrument Engineers:
  - Persons with engineering, scientific, mathematics, physical sciences,
  - RF engineering, launch and early orbit activities, and ground
  - Perform system engineering.
  - Lead other a technical team in monitoring spacecraft and ground systems performance, developing command procedures,
  - Perform special operations in a real time environment
  - Plan for special operations for on-orbit assets
  - Coordinate with users to mitigate data losses and outage
  - Prepare for the operation of new spacecraft and transition
- Persons with advanced understanding of orbital mechanics, navigation, remote sensing, instrumentation, systems integration into operations for real time and offline

Sample Tasks on EMOSS

- Produce analytical work that requires considerable engineering skill, creative ability and independent judgment.
- Propose and implement strategic planning, requirements development in support of mission operations, test and evaluation, systems integration, program implementation, and general engineering for aerospace, mechanical, marine or electrical engineering projects.
- Evaluate technical products and systems
- Provide mission operations support in the way of training 24X7 staff on satellite monitoring, contingency and anomaly responses
- Integrate new missions and projects into existing operations

Sample Tasks on EMOSS

- Support of Mission Products development and validation for mission critical operation products such as commands, telemetry, command procedures:
  - Database managers
  - Configuration Managers
- Real-Time Operation Satellite Control: Operators: with knowledge of operations, satellites, orbital mechanics, flight operations, mission scheduling
- Write Technical Documents and Procedures: CONOPS, Operational Procedures, Contingency Plans for Sat Ops and Ground Systems, COOPs, Assist with Requirements development, Operational Interface Control Documents
- Other areas:
  - Administrative
  - Entry level technicians capable of performing technical, mechanical, or historical research
  - Process engineers to evaluate new technology with focus on improving satellite ground systems, satellite monitoring
  - Web development support
- Analyzes aerospace operational performance requirements and methods

Thank You

WWW.OSPO.NOAA.GOV

OPERATING OUR NATION'S WEATHER SATELLITE

Backup Slides

WCDAS

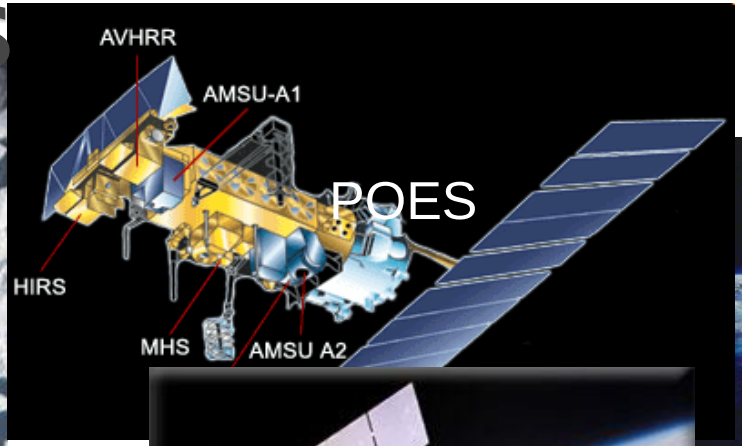

New GOES R Antenna
03-01-2013 Patrick J. Hendrickson / Highcamera.com

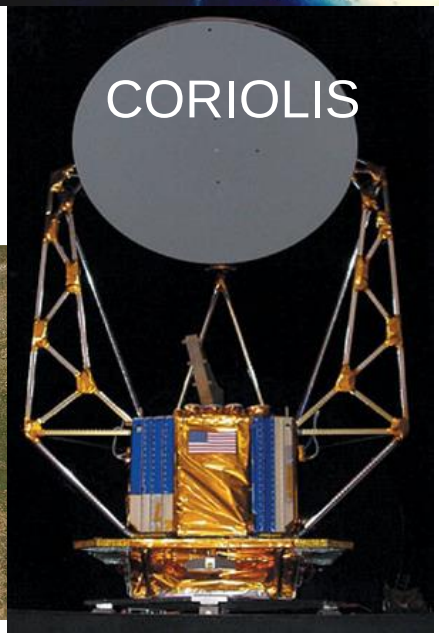
WCDAS


Operations Annex
Power Bldg
03-01-2013 Patrick J. Hendrickson / Highcamera.com

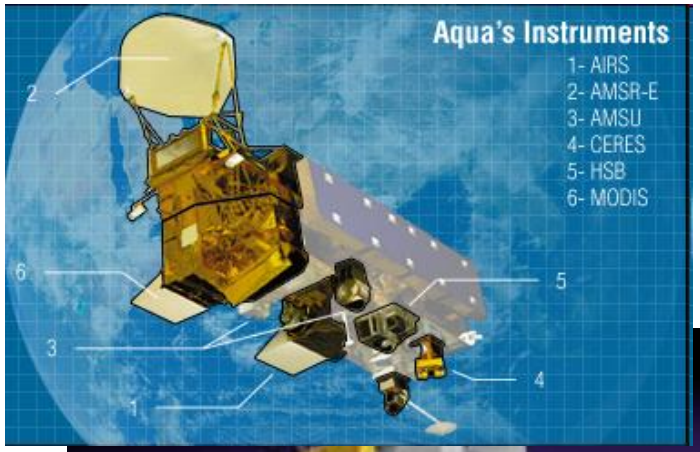
Fairbanks

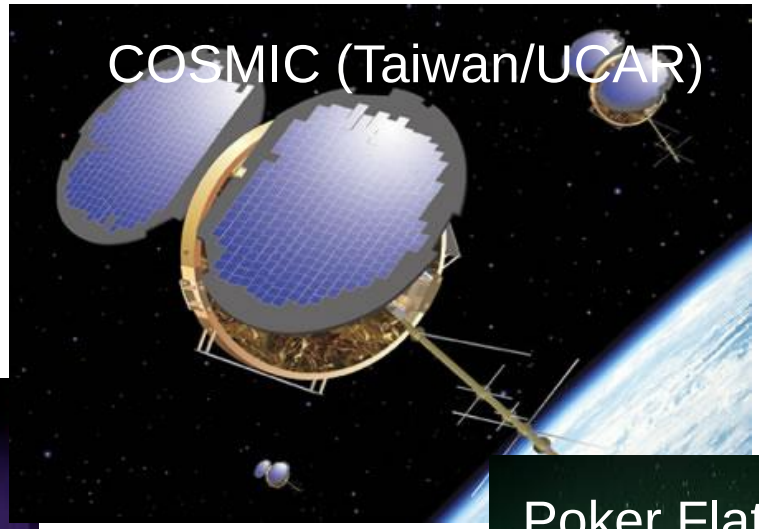
METOP (Joint US-Europe)

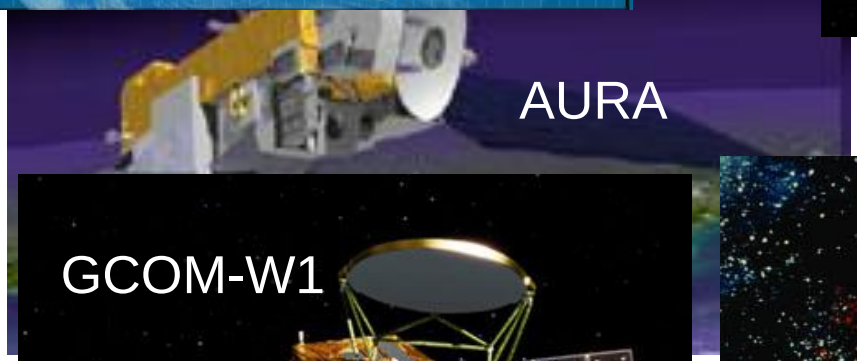




Fairbanks


Aqua's Instruments
1- AIRS
2- AMSR-E
3- AMSU
4- CERES
5- HSB
6- MODIS

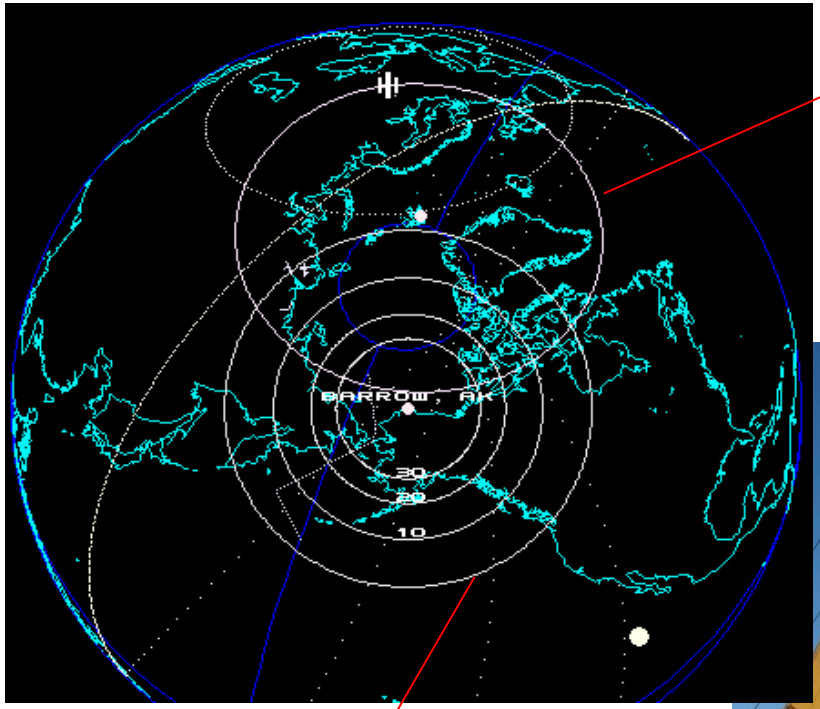

COSMIC (Taiwan/UCAR)


AURA


GCOM-W1


LANDSAT-5


Poker Flat
Research
Rocket
Range



Svalbard
station circle

Barrow station
circle

Datron 5m installed April 2010.

Acronyms

ACE	Accumulated Cyclone Energy
ADA	Antarctica Data Acquisition
A-DCS, ADCS	Advanced Data Collection System (EUMETSAT)
ADM	Atmospheric Dynamics Mission
AFWA	Air Force Weather Agency (located at Offutt AFB Nebraska)
A-HRPT	Advanced High Resolution Picture Transmission
AM	Ante Meridian (Morning)
AMSR-E	Advanced Microwave Scanning Radiometer-EOS (NASA)
AMSU	Advanced Microwave Sounder Unit (AMSU-A and AMSU-B)
AMSU-A	Advanced Microwave Sounder Unit-A Temperature Sounder
AMSU-B	Advanced Microwave Sounder Unit-B Moisture Profiler
APT/LRPT	Automatic Picture Transmission Low Resolution Direct Readout
AQUA	NASA EOS satellite
ARGOS DCS	ARGOS Data Collection System
ASCAT	Advanced Scatterometer (MetOp satellite instrument producing marine surface wind data)
ATCF	Automated Tropical Cyclone Forecast
ATMS	Advanced Technology Microwave Sounder
ATO	Authorization To Operate
ATOVS	Advanced TIROS Operational Vertical Sounder (NOAA/NESDIS)
AVHRR	Advanced Very-High Resolution Radiometer
BUFR	Binary Universal Form for the Representation of meteorological data (WMO) (data product file format)
C2	COSMIC-2

Acronyms

CDA	Command and Data Acquisition (NOAA stations)
CDC	Center for Disease Control (U.S.)
CIP	Critical Infrastructure Protection (NOAA/NESDIS, ESPC back-up site Wallops Island, VA)
CLAVR-X	Clouds from AVHRR Extended
CNES	Centre National D'etudes Spatiales (France)
CONOPS	Concept of Operations
COMS	Communications
COPC	Committee for Operational Processing Centers
COSMIC	Constellation Observing System for Meteorology Ionosphere & Climate
CrIS	Cross Track Infrared Sounder
CY	Calendar Year
DAPE	Data Acquisition, Processing, Exchange
DB APT	Direct Broadcast Automatic Picture Transmission
DB HRPT	Direct Broadcast High Resolution Picture Transmission
DCS	Data Collection System
DMSP	Defense Meteorological Satellite Program
DOC/GC	Department of Commerce/General Counsel
DoD	Department of Defense
DSCOVR	NASA satellite – Solar Wind Mission
EOS	Earth Observing System (NASA)
EPS	Energetic Particle Sensor
ESA	European Space Agency
ESPC	Environmental Satellite Processing Center (NOAA Suitland, MD)

Acronyms

eTRaP	Ensemble Tropical Rainfall Potential
EUMETSAT Darmstadt,	European Organisation for the Exploitation of Meteorological Satellites (located in Germany)
FAA	Federal Aviation Administration (U.S.)
FCC	Federal Communications Commission (U.S.)
FISMA	Federal Information Security Management Act (U.S.)
FNMOC	Fleet Numerical Meteorology and Oceanography Center (Monterey, CA)
FY	Fiscal Year
GCOM	Global Change Observation Mission
GDR	Geophysical Data Records (Jason-2)
GOES	Geostationary Operational Environmental Satellite
GOME	Global Ozone Monitoring Experiment
GPSRO	GPS Radio Occultation (COSMIC-related)
GRACE	Gravity recovery and Climate Experiment (METOP)
GRAS	Global Navigation Satellite System (METOP)
GSFC	Goddard Space Flight Center (NASA, Greenbelt, MD)
GSIP	GOES Surface and Isolation Product
HEPAD	High Energy Proton and Alpha Detector
HIRS	High Resolution Infrared Radiation Sounder (data from POES satellite)
HRPT	High Resolution Picture Transmission (data from POES satellite)
IASI	Infrared Atmospheric Sounding Interferometer (NOAA/NESDIS)
IATO	Interim Authorization To Operate
ISRO	Indian Space Research Organization (India)

Acronyms

IT	Information Technology
IWP	Ice Water Path (MIRS product)
JAXA	Japan Aerospace Exploration Agency
JPSS	Joint Polar Satellite System (operates JPSS1 & JPSS2 satellites)
JPL	Jet Propulsion Laboratory (NASA)
km	Kilometer
LAC	Local Area Coverage (data from POES AVHRR)
M2/A	METOP-A satellite
Mbps	Megabits per second
MBps	Megabytes per second
McIDAS	Man-computer Interactive Data Access System
METOP	Meteorological Operation (METOP A, B, C series EUMETSAT satellites)
MHS	Microwave Humidity Sounder (NOAA/NESDIS)
MIRS	Microwave Integrated Retrieval System , Version 5 (NOAA/NESDIS)
MOA	Memorandum of Agreement
MODIS	Moderate Resolution Spectroradiometer (NASA data product)
MSPPS	Microwave Surface and Precipitation Products System
MTSAT-1R & 2	Multi-functional Transport Satellites (1R and 2) (Japan Meteorological Agency)
N/A	Not Applicable
NAM	North American Model
NASA	National Atmospheric and Space Administration
NASA/JPL	NASA Jet Propulsion Laboratory
NAVOCEANO	Naval Oceanographic Office (located at Stennis Space Center, Mississippi)
NCEP	National Centers for Environmental Prediction (NOAA)
NDE	NPOESS Development and Exploitation
NESDIS	National Environmental Satellite, Data, and Information Service (NOAA)
netCDF4	Network Common Data Form, Version 4 (data product file format)

Acronyms

- NGDC National Geophysical Data Center (NOAA)
- NOAA National Oceanic and Atmospheric Administration (Department of Commerce)
- NOAA GS NOAA Government Service
- NPOESS National Polar-orbiting Operational Environmental Satellite System
- NPP NPOESS Preparatory Project
- NPR Nation Public Radio (news media)
- NSOF NOAA Satellite Operations Facility (located in Suitland, MD)
- NWP Numerical Weather Prediction
- NWS National Weather Service (NOAA)
- OceanSAT2 Remote sensing satellite (India)
- OIG Office of the Inspector General (Dept of Commerce)
- OSD Office of Systems Development
- OSPO Office of Satellite Products and Operations
- OSTM Ocean Surface Topography Mission (onboard the JASON-2 Satellite, CNES)
- PAC Procurement, Acquisition, and Construction
- PDA
- PEPS Post EUMETSAT Polar System
- PGF Product Generation Facility
- PM Post Meridiem
- POES Polar-orbiting Operational Environmental Satellites
- PSDI Product Systems Development and Implementation
- Qtr, Q Calendar Quarter
- RR Rain Rate (MIRS product))
- RWP Rain Water Path (MIRS product)
- SAC-C RO Satelite de Aplicaciones Cientificas-C Radio Occultation (Argentina)
- SAN Storage Area Network
- SAR Search and Rescue
- SARP Search And Rescue Processor
- SARR Search And Rescue Repeater

Acronyms

SARSAT	Search and Rescue Satellite Aided Tracking (NOAA)
SBUV/2	Solar Backscattered Ultraviolet Radiometer, Version 2 (Ozone instrument on POES satellite)
S/C	Spacecraft
SeaWiFS	Sea-viewing Wide Field of view Sensor
SEM	Space Environment Monitor
SEVIRI	Spinning Enhanced Visible and Infrared Imager (METEOSAT-9 satellite)
SSM/I	Special Sensor Microwave/Imager
SSM/IS	Special Sensor Microwave/Imager Sounder (DMSP)
SST	Sea Surface Temperature
STAR	Center for Satellite Application and Research (NOAA/NESDIS)
SVL	Svalbard, Norway
SWPC	Space Weather Prediction Center
SXI	Solar X-Ray Imager
TBD	To be determined
TERRA	NASA EOS satellite
TMI	TRMM Microwave Imager
TRaP	Tropical Rainfall Potential (related to eTRaP)
tVCDUs	t Virtual Channel Data Unit
UCAR	University Corporation for Atmospheric Research
U.S., USA	United States of America
USAF	United States Air Force
UTC	Universal Time Coordinated
UV	Ultraviolet
VA	Virginia
VAAC	Washington Volcanic Ash Advisory Center
VIIRS	Visible/Infrared Imager Radiometer Suite
XRS	X-Ray Sensor